REMARKS

Claims 1, 3-15 and 17-21 are now pending in this application, with claims 1 and 21 being the independent claims. Claims 2 and 16 have been canceled. Claims 1, 3-15 and 17-21 have been amended. The amendments to claims 3-15 and 17-20 clarify the wording of the claims, and are cosmetic in nature. Claims 1 and 21 have been amended to incorporate the subject matter of canceled claims 2 and 16, respectively. No new matter has been added. Reconsideration of the above-identified application, as amended, is respectfully requested.

In the Office Action dated September 14, 2005, independent claims 1 and 21, and dependent claims 3-6, 8-10 and 12-16 were rejected under 35 U.S.C. §102(e) as anticipated by U.S. Patent No. 6,522,696 ("*Mobin*"), while dependent claims 2, 7, 11, 17 and 18 were rejected as unpatentable over *Mobin* in view of U.S. Patent No. 5,579,345 ("*Kroeger*"). For the following reasons, it is respectfully submitted that all claims of the present application are patentable over the cited references.

The present invention relates to a hybrid frequency synchronization method, where a received signal is down-converted in the analog domain and control of a reference frequency is achieved via a digital signal. The down-converted signal is then digitally processed and used to correct any residual frequency mismatch. That is, the down-converted signal is processed such that it does not contain a frequency component. A digital control signal is used to provide a feedback signal to control a mixing frequency. Here, the mixer operates in the analog domain. As a result, the digital control signal must be converted into an analog signal. Firstly, this process leads to a quantization of frequencies in the analog control signal and therefore, causes residual frequency offsets. Secondly, the analog frequencies can vary with age and with the prevailing conditions, resulting in unknown step sizes between adjacent levels of successive ones of an analog control signal. Consequently, an estimation of the step size for use in improving synchronization is performed. By estimating the levels of successive ones of the analog control signal, the compensation for frequency mismatch can be improved.

In contrast, *Mobin* discloses a synchronization method that measures the phase mismatch of multiple bursts of received signals. This information is used to correct the phase of the received signal bursts. A signal is down-converted using a mixing frequency defined by a crystal oscillator, and all corrections are performed in the digital domain (see col. 1, line 64 thru col. 2, line 14). Consequently, *Mobin* fails to teach the system recited in amended independent claim 1,

since *Mobin* fails to provide "means for converting a digital control signal to an analog control signal for controlling a mixing frequency" and "means for estimating the difference between the levels of successive ones of the analog control signal". In view of the foregoing, amended independent claim 1 is patentable over *Mobin* and thus, reconsideration and withdrawal of the rejection under 35 U.S.C. §102 are in order, and a notice to that effect is respectfully requested.

The Examiner has cited *Kroeger* based on the failure of *Mobin* to teach "digital to analog conversion and error correction in the analog forum". *Kroeger* (col. 4, lines 16-22) discloses a system in which a received signal is down-converted then digitized. *Kroeger* (col. 4, line 33 thru col. 4, line 2) also teaches that all frequency corrections are performed in the digital domain. Accordingly, *Kroeger* fails to teach or suggest the conversion of a digital control signal into an analog control signal for controlling a mixing frequency. In addition, *Kroeger* fails to teach or suggest, "estimating the difference between the levels of successive ones of the analog control signal," as required by amended independent claim 1.

Kroeger (col. 4, lines 4-34) teaches the use of a digital to analog converter (DAC). This DAC is used for conversion of a transmitted signal. Consequently, the DAC cannot be used for the conversion of a digital control signal, as required by amended claim 1. Moreover, *Kroeger* is silent with respect to "means for estimating the difference between the levels of successive ones of said analog control signals," as also recited in amended claim 1.

Kroeger (col. *5*, line 65 thru col. 6 line 12) describes a QPSK encoder. This encoder determines the differences between the phases of two consecutive encoder outputs. However, there is no provision for estimating the difference between levels of a control signal. Consequently, the combination of *Mobin* and *Kroeger* fails to achieve the invention recited in amended claim 1, since *Kroeger* fails to teach or suggest what *Mobin* lacks. Consequently, amended independent claim 1 is patentable over the combination of *Mobin* and *Kroeger* and therefore, reconsideration and withdrawal of the rejections under 35 U.S.C. §103 are in order, and a notice to that effect is earnestly solicited.

Independent claim 21 is the method claim associated with the system of independent claim 1. Accordingly, independent method claim 21 is patentable for the reasons discussed above with respect to *Mobin* and *Kroeger*.

In view of the patentability of independent claim 1 and 21, for the reasons set forth above, dependent claims 3-15 and 17-20 are all patentable over the prior art.

Based on the foregoing amendments and remarks, this application should be in condition for allowance. Early passage of this case to issue is respectfully requested.

It is believed that no fees or charges are required at this time in connection with the present application. However, if any fees or charges are required at this time, they may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

Respectfully submitted,

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